



## INVESTIGATOR'S ANNUAL REPORT

United States Department of the Interior  
National Park Service

All or some of the information you provide may become available to the public.

OMB # (1024-0236)  
Exp. Date (11/30/2010)  
Form No. (10-226)

<b>Reporting Year:</b> 2007	<b>Park:</b> Shenandoah NP	<b>Select the type of permit this report addresses:</b> Scientific Study	
<b>Name of principal investigator or responsible official:</b> Larissa Bailey		<b>Office Phone:</b> 301-497-5637	
<b>Mailing address:</b> Northeast Amphibian Research & Monitoring Initiative  USGS - Patuxent Wildlife Research Center  12100 Beech Forest Road Laurel, MD 20708 US		<b>Office FAX</b>  <b>Office Email</b> lbailey@usgs.gov	
<b>Additional investigators or key field assistants (first name, last name, office phone, office email)</b>			
<b>Name:</b> Sandra Mattfeldt		<b>Phone:</b> 301-497-5559	<b>Email:</b> smattfeldt@usgs.gov
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<b>Name:</b> Evan Grant		<b>Phone:</b> 301-497-5842	<b>Email:</b> ehgrant@usgs.gov
<b>Project Title (maximum 300 characters):</b> DOI-USGS AMPHIBIAN RESEARCH AND MONITORING INITIATIVE (ARMI) IN THE NORTHEAST			
<b>Park-assigned Study or Activity #:</b> SHEN-00259	<b>Park-assigned Permit #:</b> SHEN-2006-SCI-0016	<b>Permit Start Date:</b> Oct 16, 2006	<b>Permit Expiration Date:</b> Dec 31, 2007
<b>Scientific Study Starting Date:</b> Oct 16, 2006		<b>Estimated Scientific Study Ending Date:</b> Dec 31, 2010	
<b>For either a Scientific Study or a Science Education Activity, the status is:</b>  Continuing		<b>For a Scientific Study that is completed, please check each of the following that applies:</b>  <input type="checkbox"/> A final report has been provided to the park or will be provided to the park within the next two years  <input type="checkbox"/> Copies of field notes, data files, photos, or other study records, as agreed, have been provided to the park  <input type="checkbox"/> All collected and retained specimens have been cataloged into the NPS catalog system and NPS has processed loan agreements as needed	
<b>Activity Type:</b> Monitoring			
<b>Subject/Discipline:</b> Herpetology (Amphibians / Reptiles)			

### Purpose of Scientific Study or Science Education Activity during the reporting year (maximum 4000 characters):

SNP is one of the Index Sites for the DOI-USGS Amphibian and Research Monitoring Initiative (ARMI) in the Northeast Region. The goals of this long-term amphibian monitoring project at SNP are to:

1. Monitor pond, streamside and terrestrial amphibians

2. Estimate bias in and validate survey methodologies
3. Assess spatial and temporal variation in amphibian counts in relation to environmental variables
4. Assess health and disease status of amphibians at SNP
5. Provide amphibian distribution map data to SNP
6. Conduct population monitoring and conservation genetics work on the federally endangered Shenandoah Salamander (*Plethodon shenandoah*)

**Findings and status of Scientific Study or accomplishments of Science Education Activity during the reporting year (maximum 4000 characters):**

Efforts for the 2007 focused on *P. shenandoah* and stream salamander sampling (subject of another permit, Evan Grant PI). For *P. shenandoah*, 2007 represented a pilot sampling season focused on locations within *P. shenandoah*'s historically known range on Hawksbill and Stony Man mountains. We selected a random set of 5 points that were at least 200 meters apart (to insure independence) within the previously known stratum on each mountain, and determined that 4 points on each of the two mountains could be safely sampled, even at night. The Appalachian Trail bisects both mountains and since trail use and maintenance may influence *P. shenandoah* populations, we placed paired sample sites at each point: one 15 meters above the AT trail and one 15 meters below the trail (8 sites each on Stony Man and Hawksbill mountains). These 16 sites served as our pilot study sites.

Two transects (8 and 32 m long x 2 m wide) and 2 plots (4 m x 4 m; 8 m x 8 m) were established at each site to investigate how the shape and size of the sampled area affects the *P. shenandoah* detection probability. Sites were surveyed at least 3 times during the spring, summer, and fall seasons under varying conditions: day and night-time searches, during wet or dry conditions. *P. shenandoah* was detected on all of the 8 Hawksbill sites during at least one season (spring, summer, or fall 2007), and at 7 of the 8 Stony Man sites. Occupancy probabilities were higher on Hawksbill subunits than Stony Mountain subunits, but did not vary with size or shape of the subunit, but there was evidence of seasonal changes in *P. shenandoah* distribution among these subunits. Detection probabilities varied with season, size and shape of the subunit, and between night and day surveys. Larger, longer subunits had higher detection probabilities than smaller, square plots (e.g. detection probabilities in the spring ranged between ~0.45 on 4 m x 4 m plots to >0.70 on 32 m x 2 m transects). Surprisingly, detection probabilities for *P. shenandoah* were highest in the summer, but still acceptable in the spring and fall months (e.g. for 4 x 4 m plots: detection probabilities were ~0.45, ~0.55, ~0.40 in the spring, summer and fall, respectively).

**For Scientific Studies (not Science Education Activities), were any specimens collected and removed from the park but not destroyed during analysis?**

No

**Funding specifically used in this park this reporting year that was provided by NPS (enter dollar amount):**  
\$0

**Funding specifically used in this park this reporting year that was provided by all other sources (enter dollar amount):**  
\$15696

**List any other U.S. Government Agencies supporting this study or activity and the funding each provided this reporting year:**

**Paperwork Reduction Act Statement:** A federal agency may not conduct or sponsor, and a person is not required to respond to a

collection of information unless it displays a valid OMB control number. Public reporting for this collection of information is estimated to average 1.625 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the forms. Direct comments regarding this burden estimate or any aspect of this form to Dr. John G. Dennis, Natural Resources (3127 MIB), National Park Service, 1849 C Street, N.W., Washington, DC 20240.